POST-CONSTRUCTION REQUIREMENTS

from

THE JOINT EFFORT

for Hydromodification Control & LID

Workshop #2
June, 2012

Presented by:
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Central Coast Water Board

The Joint Effort seeks to protect watershed processes potentially impacted by how stormwater runoff is managed once project is built

Post-Construction Stormwater Requirements

Today's Presentation

- Draft Post-Construction Requirements
- Key Features:
  - ✓ LID Standards
  - ✓ Stormwater Control Plan
  - ✓ Adjustments to Requirements
- Focus on Runoff Retention
- Next Steps

Draft Post-Construction Requirements

- ≥ 2,500 ft^2 Site Design / Runoff Reduction
- ≥ 5,000 ft^2 Water Quality Treatment
- ≥ 15,000 ft^2 Runoff Retention
- ≥ 22,500 ft^2 Peak Management

Draft Post-Construction Requirements

≥ 2,500 ft^2 Site Design / Runoff Reduction

Use following where feasible:

- Prevent disturbance of creeks
- Minimize compaction of native soils
- Limit clearing and grading of native vegetation
- Minimize impervious surfaces
- Direct runoff

Draft Post-Construction Requirements

5,000 – 15,000 ft^2 Water Quality Treatment

1. LID Treatment Systems (retain) 85th Percentile 24-hr event
2. Biofiltration Treatment System
3. Flow-through Treatment (SUSMP)

Draft Post-Construction Requirements

≥ 15,000 ft^2 Runoff Retention

Depending on Watershed Management Zone:

Retain 85^{th} or 95^{th} Percentile via infiltration or storage

Draft Post-Construction Requirements

$\geq$ 22,500 ft^2 Peak Management

Match Post-Project to Pre-Project peak flows for the 2- through 100-year storm events

Meet Retention Requirements via LID Development Standards

- Site Assessment
- Site Design
- Site Runoff Reduction
- Structural Measures

Meet Retention Requirements via LID Development Standards

Site Assessment Measures – identify opportunities and constraints

Document :

- Site topography
- Hydrologic features
- Depth to seasonal high groundwater
- Depth to an impervious layer such as bedrock
- Presence of unique geology (e.g., karst)
- Geotechnical hazards
- Documented soil and/or groundwater contamination
- Soil types and hydrologic soil groups
- Vegetative cover/trees

Meet Retention Requirements via LID Development Standards

Site Design Measures – optimize the use of LID site design measures, as feasible and appropriate at the project site:

- Define development envelope, protected areas, areas most suitable for development, areas to be left undisturbed
- Conserve natural areas, existing trees, other vegetation, and soils
- Concentrate development on portions of the site with less permeable soils, preserve areas that can promote infiltration

Meet Retention Requirements via LID Development Standards

Site Runoff Reduction Measures

- Reduce amount of runoff for which retention and treatment is required
- Direct runoff from impervious surfaces to undisturbed or natural landscaped areas
- Any remaining volume must be addressed using Structural Stormwater Control Measures

Meet Retention Requirements via LID Development Standards

Structural Stormwater Control Measures

- Priorities:
- Bioretention
- Rainwater harvesting and reuse
- Pervious Pavement
- Vegetated Roofs
- Soil Amendments

Draft Post-Construction Requirements

Where LID not feasible, use conventional designs

- Infiltration (Retention) Basins
- Infiltration Trenches
- Dry Wells
- Constructed Wetlands
- Wet Ponds

Draft Post-Construction Requirements

Stormwater Control Plan

- Project name, type, application number…
- Total project site area
- Total new and/or replaced impervious surface area
- Site assessment summary
- Summary of Runoff Reduction Measures and Structural Stormwater Control Measures
- Supporting calculations used to meet Water Quality Treatment and Runoff Retention Requirements
- Documentation of infeasibility where on-site compliance can't be achieved

Watershed Management Zones

WMZ	Percent Urban Area
1	62.6
2	8.8
3	2.5
4	13.6
5	2.6
6	2.2
7	0.1
8	0.1
9	6.3
10	1.0
Water	0.2
	100%

Adjustments and Off-Ramps

- Redevelopment
- Special Circumstances
- Alternative Compliance

Redevelopment Projects

Mitigation Required for Less than Full Area

Replaced Impervious Surface X 0.5

Special Circumstances

- Highly Altered Channels
- Intermediate Flow Control Facilities
- Historic Lake or Wetland

Alternative Compliance

- Technical Infeasibility
- Urban Sustainability Area
- Watershed or Regional Plan

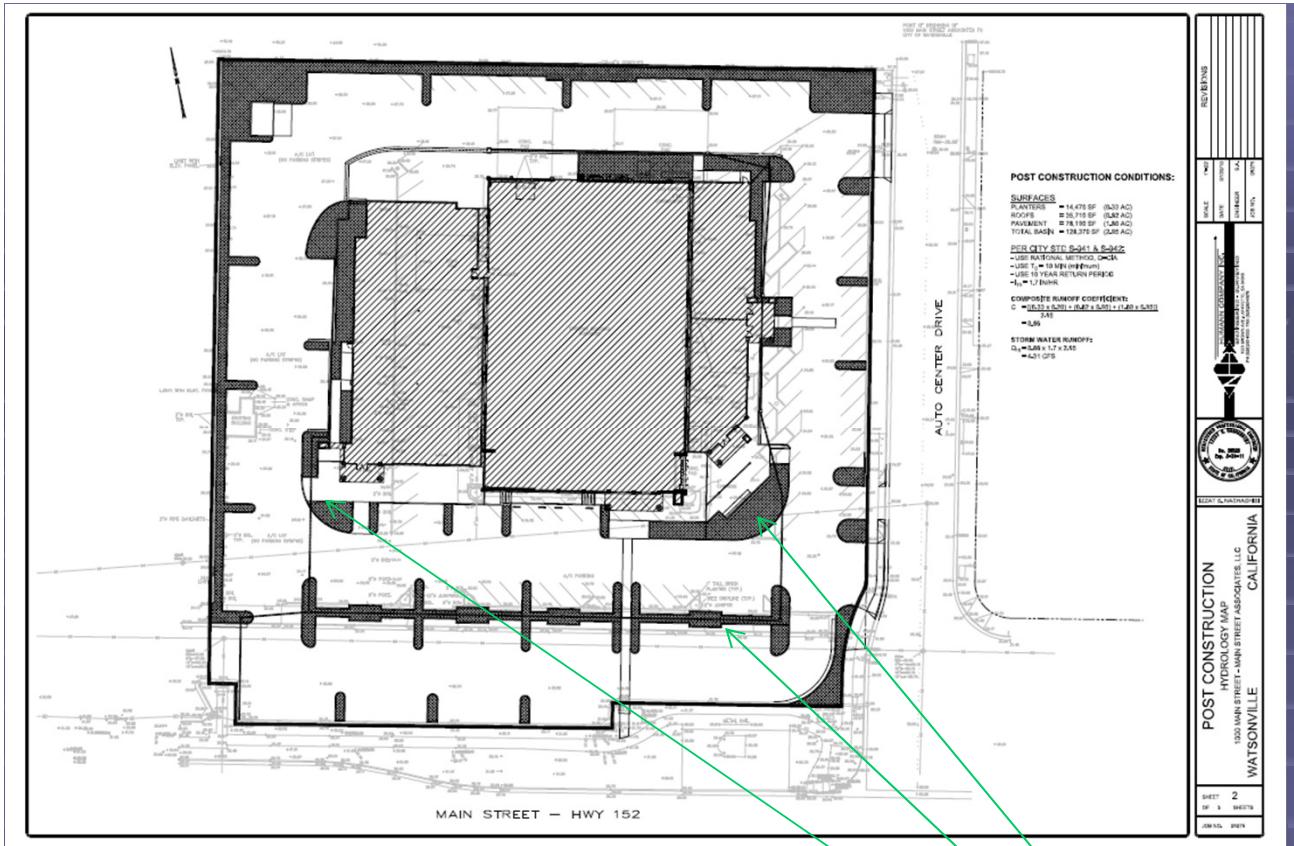
Focus on Retention

Would the 95th Percentile Criteria Work in the Central Coast Development Environment?

Grocery Outlet

A Redevelopment Project on Main St. Watsonville

- 2.95 Acre Site
- 89% Impervious *(11% Landscaping BMPs)*
- Located in WMZ 1
- Retain 95th Percentile event (1.23”)
- Compliance must be achieved by infiltration



POST CONSTRUCTION CONDITIONS:

SURFACES

PLANTERS	= 14,470 SF	(0.33 AC)
ROOFS	= 35,710 SF	(0.82 AC)
PAVEMENT	= 78,190 SF	(1.80 AC)
TOTAL BASIN	= 128,370 SF	(2.95 AC)

Planters Designed as Bioswales

Does the Current Design Meet the 95th Percentile Requirement?

Site data	SF	Ac
Total Site	128,370	2.95
Infiltration BMP	14,470	0.33
Roofs	35,710	0.82
Pavement	78,190	1.79

Soil Infiltration Rates (in/hr)

A	*up to 8*
B	*0.5- 1*
C	*0.17-0.27*
D	*0.02- 0.1*

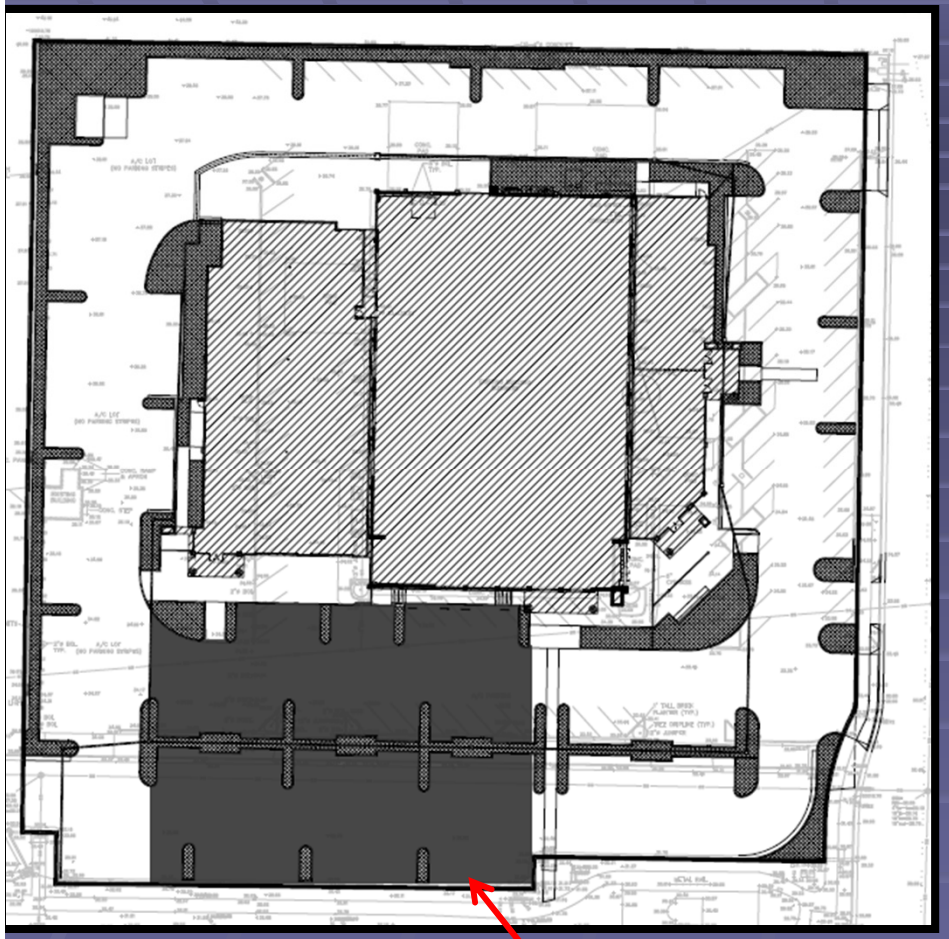
Middle of each range used for calculations

	Acre Feet	Cubic Feet
95th% Treatment Volume	**0.25**	**10,692**

Yes For A and B Soils

No for C & D Soils

	Soil Type			
	A	B	C	D
Area (Acres) Required for Infiltration in < 72 hrs	0.20	0.20	0.46	2.05
Enough pervious space on site to make infiltration feasible?	**Yes**	**Yes**	**No**	**No**
Infiltration BMP as a % Of Total Site	**7%**	**7%**	**16%**	**69%**



What About 20,000 ft^2 of Porous Pavement?

Will that meet the 95th% Criterion on Type C and D Soils?

Site data	SF	Ac
Total Site	128,370	2.95
Porous Paving	20,000	0.46
Roofs	35,710	0.82
Pavement	72,660	1.67

Yes for A-C Soils

No For D Soils

	Acre Feet	Cubic Feet
95th% Treatment Volume	**0.23**	**10,173**

	Soil Type			
	A	B	C	D
Area (Acres) Required for Infiltration in < 72 hrs	0.19	0.19	0.44	1.95
Enough pervious space on site to make infiltration feasible?	**Yes**	**Yes**	**Yes**	**No**
Infiltration BMP as a % Of Total Site	**7%**	**7%**	**15%**	**66%**

Findings

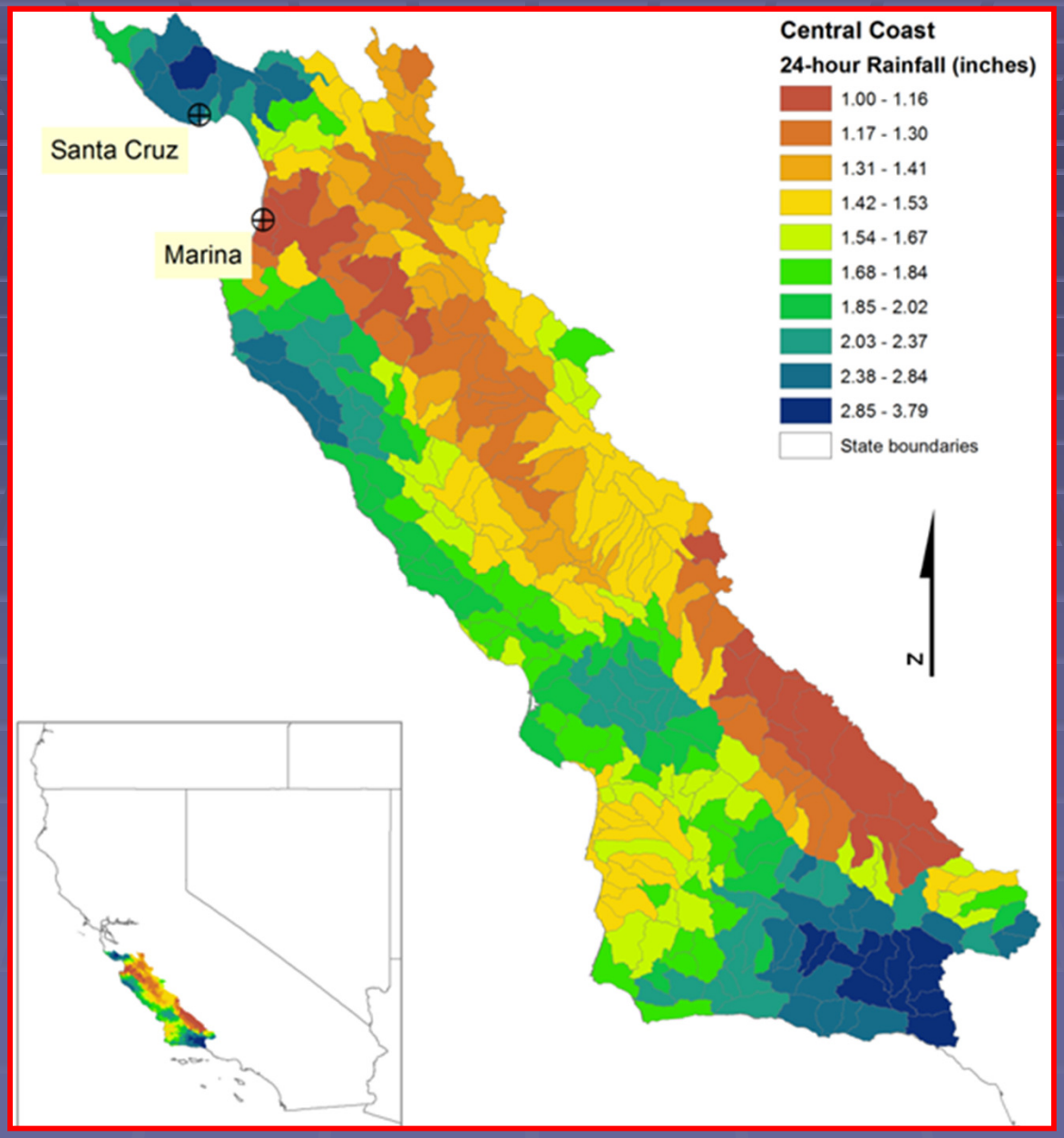
Conservative Assumptions:

- Rough estimate of runoff
- Assumes all water infiltrated in 72 hours
- No temporary ponding or storage in bioretention cell
- No correction for Redevelopment
- Homogeneous Soils

Retaining the 95th Percentile Storm

- Type A/B soils: requires ~5% of the total site dedicated to BMP
- Type C soils requires ~10% of the total site dedicated to BMP
- Type D soils requires ~40 % of the total site dedicated to BMP

95th Percentile Rain Event Variable



Source:TetraTech

Central Coast Soils in Urban Areas

Hydrologic Soil Group	Percentage in Urban Areas
A	13%
B	37%
C	19%
D	27%

Retention is Challenging

- A combination of high rainfall and low-infiltrative soils presents greatest challenge
- Pays to reduce imperviousness
- Technical infeasibility can be demonstrated
- Redevelopment ‘handicap’ lessens burden
- Historic lake and wetland adjustment

Next Steps and Schedule

- July 6: Public Comment Due
- Water Board staff redrafts
- August 22: Release Draft to public
- September 6: Water Board Meeting

If Water Board approves, 180 days later:

- March 13, 2013: Munis adopt Post-Construction Requirements

Draft Phase II Small MS4 General Permit

Central Coast Municipalities → Joint Effort Criteria instead of Draft Permit (E.12)

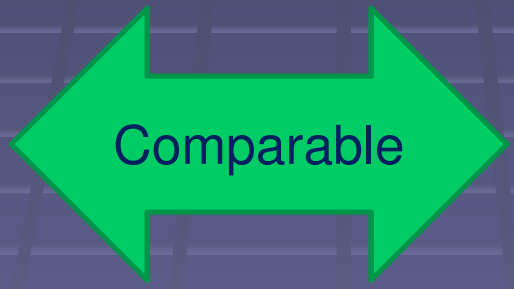
- Exceptions

Schedule

- Current Enrollees - Joint Effort Schedule
- New Enrollees - 1 Year of Permit effective date

Draft Phase II Small MS4 General Permit

Draft Permit (Section E.12)



Draft Central Coast Post- Construction Requirements

Draft Phase II Small MS4 General Permit

Draft Permit Workshop

Central Coast Water Board Office

Monday, June 18, 2012

9 AM – 12 PM

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Office of Governor
Jerry Brown
Visit his Website

- Cal/EPA
- State & Regional Water Boards
- Laws/Regulations
- Plans/Policies
- Programs
- Decisions Pending and Opportunities for Public Participation

Water Quality

Performance Report

RESOURCES

- Email Subscriptions
- Data & Databases
- Business Help
- Public Records Center
- Grants & Loans
- Fees
- File an Environmental Complaint
- Employment
- Useful Links
- Website Index

California

Central Coast Region

Protecting California's Water

- Our Vision
- Board Meeting Calendar
- Basin Plan
- Programs
- Total Maximum Daily Loads
- Impaired Waterbodies
- Success Stories
- Ambient Monitoring Program (CCAMP)
- Storm Water
- Watershed Management Initiative
- Enforcement
- 401/404 Water Quality Certifications
- Underground Storage Tanks
- Wastewater Permitting
- Reporting a Sewage Spill
- Agriculture
- More....

Joint Effort Docs

ANNOUNCEMENTS

- Irrigated Lands Order wins approval on Central Coast
- "Sampling My Private Well"
- Nitrate in Domestic Drinking Water Wells
- Proposed Revisions to Onsite Implementation Program
- Ag Program - Update your information by submitting an Electronic NOI
- Ag Order Update and Comments
- Joint Effort: Implementing LID & Hydromodification Controls
- Current Water Purveyors Report
- Safe Disposal Of Household Medications
- "Slow the Flow: Make Your Landscape Act More Like a Sponge"
- Disposal of Prescriptions, Medicine & Over-the-Counter Drugs for SLO County
- More announcements ...

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